

## **Spermatocyte chromosome complements of four species of *Arhopala* (Arhopalini, Lycaenidae, Lepidoptera) from Thailand**

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**Abstract** The haploid chromosome complements of spermatocytes were investigated for four species of *Arhopala* (Arhopalini, Lycaenidae) from Thailand. Three of them had an  $n$ , 24-karyotype and the remaining one, an  $n$ , 26-karyotype. The whole configurations of their chromosome complements in the first division were shown in the figures. The haploid complement of *atrax* ( $n$ , 26) was featured with the inclusion of a single chromosome easily distinguished; it was much smaller in size than the rest and, therefore, the smallest in the complement. No such chromosomes were observed in three other species investigated.

**Key words** Spermatocyte chromosomes, *Arhopala* species of Thailand, Arhopalini, Lycaenidae, Lepidoptera.

*Arhopala* is a genus of the Lycaenidae and belongs to the tribe Arhopalini. A variety of species of this genus are known from Thailand (Pinratana, 1981). As far as we are aware, however, chromosome survey of them has not been attempted as yet. Recently, we have examined spermatogenesis of some *Arhopala* species obtained in Thailand. This paper gives an account of the spermatocyte chromosomes of four of them.

### **Materials and methods**

Adult males were captured by one of us (A. A.) at Chiang Mai, Thailand in May of 1985. Their testes were fixed there by himself in PFA 3-mixture. Testis-sections (8  $\mu$ m in thickness), prepared according to the ordinary histological techniques, were stained with Heidenhain's iron-haematoxylin.

The number of the males of each species used for chromosome counting, that of the haploid chromosome complements examined in the meiotic divisions, and the haploid chromosome numbers determined were shown in Table 1.

The adult specimens of these *Arhopala* lycaenids were all identified by Mr Shilo Osada, Urawa.

### **Observations and remarks**

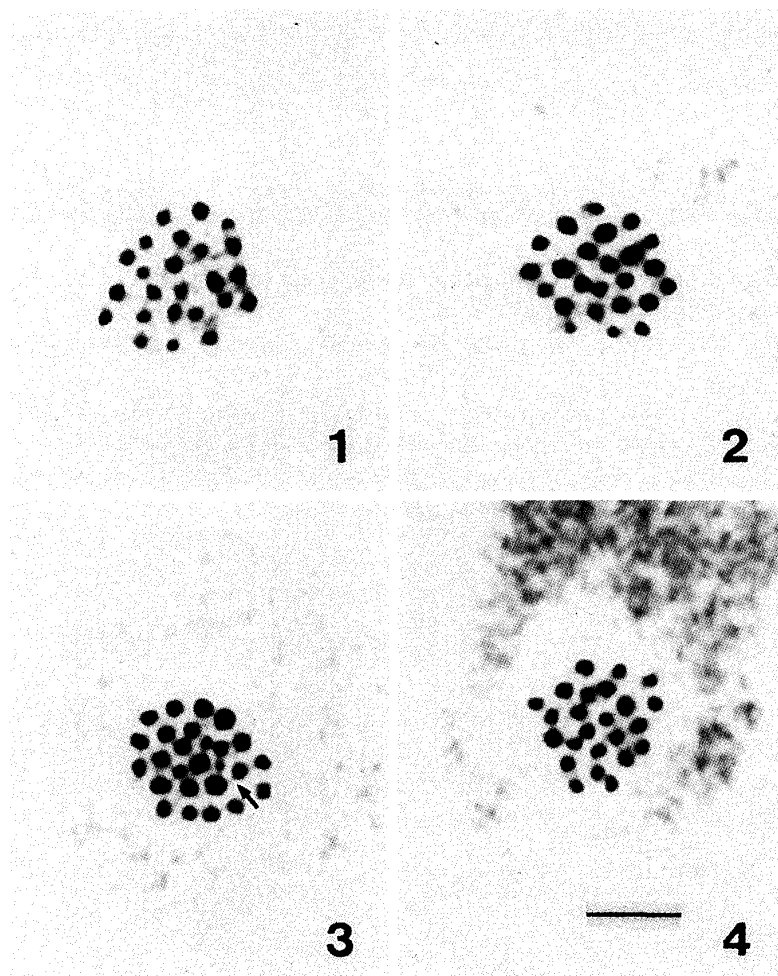
As shown in the table, three of these four, *amantes amatrix*, *pseudocentaurus nakula* and *abseus indica*, had an  $n$ , 24-karyotype, and the remaining one, *atrax*, an  $n$ , 26-karyotype. Variation in their haploid numbers was not observed. The attached micrographs (Figs 1-4) show the whole configurations of their haploid complements ( $n$ , 24 and  $n$ , 26) in the first division.

Table 1. Spermatocyte chromosome survey of four *Arhopala* species of Chiang Mai, Thailand.

Species	No. of males used for chromosome counting	No. of haploid complements examined in :		Chromosome no. ( <i>n</i> ) determined
		1st division	2nd division	
<i>amantes amatrix</i>	3	17	7	24
<i>pseudocentaurus nakula</i>	5	49	14	24
<i>atrax</i>	3	16	8	26
<i>abseus indica</i>	2	18		24

Their haploid chromosomes were nearly round in outline in polar view, as usual in other lepidopterans examined so far.

In each of the haploid complements of *atrax*, when examined in polar view, a single chromosome was always distinguished from the rest by its much smaller size; it was the smallest element in the complement (Fig. 3 ; arrowed). No such chromosomes were obser-



Figs 1-4. Spermatocyte chromosome complements in the first division of four *Arhopala* species of Thailand. 1. *A. amantes amatrix*. *n*, 24. 2. *A. pseudocentaurus nakula*. *n*, 24. 3. *A. atrax*. *n*, 26. Arrow indicates the smallest element in the complement. 4. *A. abseus indica*. *n*, 24. Scale bar represents *ca* 10  $\mu$ m.

ved in three other species.

The haploid chromosome numbers reported for other species of the Arhopalini from Asia and Oceania are: 14 in *Narathura bazalus turbata* from Japan (Saitoh and Takahashi, 1993), 24 in *N. micale amphis* from Australia (Maeki and Ogata, 1971), *N. japonica japonica* from Japan (Maeki, 1953; Saitoh and Takahashi, 1993) and *Arhopala* sp. from Papua New Guinea (Saitoh *et al.*, unpublished), 25 in *Surendra quercetorum quercetorum* from Nepal (Saitoh and Abe, 1970), and 32 in *Panchala ganesa loomisi* from Japan (Saitoh and Takahashi, 1993). Since the modal number of the haploid chromosomes in the Lycaenidae is 24, highly decreased ( $n$ , 14) and increased ( $n$ , 32) numbers are noted. Such a variety of the haploid numbers might be an indication of diversity in the karyotypes of the Arhopalini which comprises many species belonging to different genera. However, it is still too early to discuss cytotaxonomy of this group of lycaenids, since the majority of species of the group have remained cytologically unexplored at present.

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### 摘 要

タイ国産 *Arhopala* 属 4 種の精母細胞染色体 (斎藤和夫・阿部東・工藤貢次)

タイ国産 *Arhopala* 属 4 種の成虫雄で精母細胞染色体を観察した。染色体数は  $n$ , 24 (3 種) 及び  $n$ , 26 (1 種) で、極面観の中期染色体はほぼ円形にみえる。 *A. atrax* の半数染色体組は最小の 1 染色体を含む 26 染色体構成 ( $n$ , 26) である。最小染色体はほかの 25 染色体よりはるかに小形で、その識別は容易である。このような染色体は、ほかの 3 種にはみられない。

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